

Project #: 644

Title: Response and Intervention System for Climate Change Induced Paralytic Shellfish Poisoning in Aleut Communities

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Project Summary: This project will educate local residents about paralytic shellfish poisoning (PSP) and train them to use test kits to monitor for PSP toxin. The project activities will include workshops, development of a manual on how to set up a community-based surveillance system, and public outreach materials. The proposed communities extend the length of the Aleutian Islands where little baseline data is available on PSP toxin. Since 1973, over 150 outbreaks have been reported in Alaska, with three fatalities since 1994. In an effort to reduce the risk of PSP encounters, the Alaska Science and Technology Foundation funded research to develop a rapid test kit proposed by Jellett Biotech in Nova Scotia, Canada, which was developed in 1994 and, in 2004, was approved by Food and Drug Administration, Interstate Shellfish Sanitation Program for screening shellfish, opening opportunities for communities to use this reliable and inexpensive method. The project PIs will investigate the increased risk of PSP as a result of climate change and the reliability of traditional knowledge used when harvesting clams and mussels. Methods developed to monitor occurrence and distribution of PSP toxins in connection with climate change observations will increase communities' capacities in responding to the threat of poisoning while developing the process of interlinking modern technology and traditional knowledge.

Progress Summary: The PIs undertook PSP project workshops in Sand Point and Unalaska in Alaska and Nikolsakoye, Bering Island, Russia to educate the local residents about PSP and the PSP project. In each of these three primary sites technicians were trained to identify local bivalves, understand their differences as it relates to PSP toxicity levels, and to use the Jellett PSP test kits to monitor PSP in their area. The technicians assisted in the development of sampling plans. The technicians passed a proficiency test. At the community workshop, the local technicians were introduced to the community as the 'go to' for questions about the PSP project

and testing program. Data is beginning to be sent in monthly from the technicians from the three primary study sites.

We have completed and distributed the project manual which includes sampling, testing and shipping protocols, key on the identification of Alaska and Bering Island bivalves, shellfish dissection manual, standard operating procedures for the Jellett test kits and public outreach materials.

Agreements are being formulized for obtaining collections from Aleutian and Pribilof Island satellite communities (Akutan, Atka, False Pass, King Cove, Nelson Lagoon, Nikolski and St. George). Stipends are paid to the satellite community members who make the collections and send them to the PI for analysis. So far we have made arrangements and obtained and tested samples from Akutan, False Pass and King Cove. We expect to finalize the arrangements with Nikolski and St. George before winter. Nelson Lagoon samples will only be collected during the spring, the only time bivalves are available. In addition, U.S. Fish and Wildlife Service and NOAA field researchers have agreed to make remote research station collections, mostly next spring and summer. The U.S. Fish and Wildlife Service made two mussel collections from Shemya Island (near Attu Island) in September.

Field supplies have been purchased. Most of these were distributed during the site visits, but additional supplies (boots, flashlight, additional zip lock bags, etc.) were sent to the Nikolskoye study site.

HOBO temperature data loggers were deployed in Sand Point, Unalaska and Nikolskoye. The HOBO temperature data loggers were calibrated and programmed to sample water temperatures every hour. They were deployed 2-4 meters and secured with 1/4 inch nylon line.

Results so far are showing a pattern of positive results for PSP in the eastern Aleutian Islands and no PSP (negatives) in the western Aleutian Islands and the Commander Islands. We have tested blue mussels (*Mytilus trossolus*), Arctic surf clam (*Mactromeris polynyma*), Pacific razor clam (*Siliqua patula*), Pacific littleneck clam (*Protothaca staminea*), Nuttallii cockle (*Clinocardium nuttallii*), Alaska great tellin clam (*Tellina lutea*) and butter clam (*Saxidomus giganteus*). The results have been sent to the Jellett Lab and verified.

Public outreach is central to this project. A 'PSP Data Summary' compiles the results and documents the chain of custody of the samples and test strips (results). This report is sent out periodically to the field technicians and interested parties. Wright presented an overview and preliminary results from the project at the September 22, 2006 Aleutian Pribilofs Islands Association Environmental Teleconference which included participants from agencies and many of the Aleutian and Pribilof Island communities. The notes from that meeting were widely distributed. AIA will incorporate a section about the PSP project in their quarterly newsletter and web site, both of which are in development. In October, Wright will present a PSP project overview and preliminary results to the PICES Harmful Algal Bloom Committee meeting in Japan.



Ivan Vozhikov, one of the Nikolskoye PSP technicians, is digging razor clams. Photo by Natalia Tatarenkova.



Bruce Wright is prying a relative large mussel from one of the high-energy Nikolskoye beaches.
Photo by Natalia Tatarenkova.



PSP testing supplies set up in anticipation of testing bivalves for PSP. Photo by Natalia Tatarenkova.



Nikolskoye technician, Natalia Tatarenkova, prepares a sample of razor clams to be tested for PSP. Photo by Bruce Wright.



Unalaska technician, Anfesia Tutiakoff (left), and her assistant search for razor clams from Sunshine Cove. Photo by Bruce Wright.



Anfesia Tutiakoff is collecting little neck clams and mussels from Captain's Bay. Photo by Bruce Wright.



Anfesia Tutiakoff prepares a sample of processed clams for the extraction process.



Bruce Wright gives a community PSP presentation in Unalaska.